

## SECTION 27 13 00

### COMMUNICATIONS BACKBONE CABLING

#### PART 1 - GENERAL

##### 1.01 SUMMARY

- A. This Section includes requirements for backbone cable within the Communications Cabling System. General requirements for backbone cable are covered in Division 27 Specification Section *Communications - General Requirements*.

##### 1.02 RELATED SECTIONS

- A. The requirements of Division 27 Specification Section *Communications - General Requirements* shall serve as the basis for the requirements of this Section, and are incorporated by reference into this Section.

##### 1.03 SUBMITTALS

- A. Comply with the Submittal portion of Division 27 Specification Section *Basic Communications Requirements*. Provide submittal information for the following:
  - 1. Product Data

#### PART 2 - MATERIALS

##### 2.01 GENERAL

- A. Manufacturer: Unless otherwise indicated, equipment and materials in this Section shall be of the same Manufacturer as that specified under Division 27 Specification Section *Communications - General Requirements*.
- B. Part Numbers: Refer to the Equipment Schedule(s) for specific manufacturers and part numbers. If no part number is provided, then any part meeting the manufacturer and requirements specified is acceptable.

##### 2.02 COPPER

- A. General:
  - 1. Cable shall be multi-pair 23 AWG solid copper conductors insulated with color coded PVC, and shall be sized in pair counts as shown on the Drawings.
  - 2. Copper cable ratings shall be as specified under Division 27 Specification Section *Communications - General Requirements*.
- B. Inside Plant (Interior): Provide indoor rated cable.
  - 1. Multi-Pair Backbone: Provide as shown on the Drawings. Cable shall be <unshielded>.
  - 2. Data Backbone: Provide horizontal copper cable. See Division 27 Specification Section *Communications - Horizontal Cabling*.
- C. Outside Plant (Exterior): Provide outdoor rated cable. Cable shall conform to RUS PE-89, shall be single jacketed, shielded, and provided as follows:
  - 1. For Conduit/Duct Installation: Cable shall be flooded (insulated with filling compound).
  - 2. For Direct-Buried Installation: Cable shall be armored and flooded (insulated with filling compound).

##### 2.03 FIBER

- A. General: Provide fiber optic cable in quantities, strand counts, and types (singlemode, multimode) as shown on the Drawings. Fiber cable shall be all-dielectric, shall conform to Bellcore and RUS standards, and shall be as further specified under Division 27 Specification Section *Communications - General Requirements*.
- B. Inside Plant (Interior): Provide indoor rated cable. Cable shall be tight buffered.

1. The backbone cabling between IDF, MDF contained in the same building shall be OM3 tight-buffered, plenum-rated armored cable.
  2. Telecommunications rooms with less than 288 copper drops shall have 12 strand OM3 tight-buffered, plenum-rated armored cables.
  3. Telecommunications rooms with more than 288 copper drops shall have 24 strand OM3 tight-buffered, plenum-rated armored cables. See project documentation for the number of 24 strand cables needed for these larger TRs.
  4. All DPS intra-building fiber backbones must be armored whether or not routed in conduit.
  5. All optical fiber cables shall have a minimum bend radius of 15 times the outside diameter of the cable.
  6. All conduit runs shall contain long radius "sweeps" versus 90-degree bends.
  7. The optical fiber cable shall have the proper strain relief installed in accordance with the manufacturer's instructions.
  8. All cables containing Kevlar type strength member shall have the strength members braided and secured to the mounting enclosure.
- C. Outside Plant (Exterior): Provide indoor/outdoor rated cable. Cable shall be loose buffered (loose tube) with a central strength member, and shall be dry cable design with dry water blocking technology that eliminates the need for or use of flooding compound.
1. The backbone cabling between buildings shall be 24 strands, gel free, indoor/outdoor rated, loose-tube multi-mode OM3 fiber.
  2. Transition to tight-buffered indoor cable shall be accomplished using fan-out kits mounted in wall mount enclosures in the entrance facility. See Attachment 1 - Materials at the end of this document for part numbers.

## **PART 3 - EXECUTION**

### **3.01 GENERAL**

- A. All armored fiber and copper backbone communications cable shall be installed in common routes but separated by classification, with cable tied to approved support hangers and segregated where they enter the IDF, MDF.
- B. In all IDF, MDF similar cable types will be separated and grouped for termination. In NO case shall cables of a different type be intertwined.
- C. Copper backbone will require a 10' service loop. Fiber backbone will require a 10' service loop. TR slack shall be appropriately and neatly stored in vertical wire managers.
- D. Between the MDF and each intermediate IDF the Contractor will install:
  1. One 25 pair 24 AWG plenum tie cable. Category 5E
  2. One OM3 12 strand multi-mode 50/125µm plenum armored fiber optic cable for every 288 Category 6 cables installed.
  3. Four 18 Ga. 4 conductor shielded PVC or plenum ties.
  4. Two 4 pair Category 6 PVC or plenum data backup ties terminated on yellow jacks at the end of the last patch panel.
  5. Two 18 Ga. 6 conductor stranded non-shielded with drain. (confirm with DOTs PM)
  6. A new pull string.
  7. Two 22 GA. 6 Conductor non-shielded.
  8. 1 25 pair cat5E from Rack to backboard in all MDF/IDF

- E. Between the MDF racks and the intermediate IDF racks and the respective plywood wall-fields the contractor will install:
  - 1. Eight Category 6 plenum cables terminated with all other station cables in the rack to a two deep surface mount box and faceplate on the plywood wall-field. Confirm location with DOTs PM. (Typically mounts close to security panel/Paging). IDF closets get 4 Cat6, MDF closets get 8 Cat6.
  - 2. One 25 pair from data rack to backboard in all IDF, MDF closets. Confirm location with DoTS project manager.

**PART 4 - EQUIPMENT SCHEDULE**

**4.01 – NOT USED**

**END OF SECTION 27 13 00**